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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,687	04/14/2004	Joseph W. Tsang	200316003-1	8068

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 08/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/824,687	TSANG ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/14/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. (U.S. 6,087,051) in view of Yacobucci et al. '858 (U.S. 6,312,858) and Thompson et al. (U.S. 6,341,856).

Shoji et al. disclose overcoating composition or fixative for ink jet printing wherein the fixative overcoats the ink and comprises vehicle and polyurethane (abstract, col.2, lines 20-25, col.15, lines 42-45, col.16, lines 63-65, and col.19, lines 1-23).

The difference between Shoji et al. and the present claimed invention is the requirement in the claims of (a) two-part system, (b) glass transition temperature and melting temperature of the polyurethane, and (c) amount of reactive monomer.

With respect to difference (a), it is noted that the present claims require a fixative comprising a reactive monomer such as isocyanate and second component such as polyol wherein the reactive monomer and second component react to form a polymer on the printing medium while Shoji et al. disclose fixative comprising polyurethane deposited onto a printing medium. It is well known that polyurethane is formed by the reaction of isocyanate and polyol.

Noting that the present claims are directed to a fixative, and further that the claimed fixative is the same as the fixative of Shoji et al. once the isocyanate and polyol are reacted on the printing medium, that is, after reaction the claimed fixative comprises polyurethane, it is not seen as to how the process of forming the fixative by separately combining the ingredients via a reaction between isocyanate and polyol (two-part system) would lead to the fixative as being patentable over the same fixative formed by directly depositing the polymer into the printing medium (one-part system). Moreover, there is no evidence to indicate any criticality of the two-part system over the one-part system.

With respect to difference (b), Shoji et al. disclose the use of polyurethane, but do not disclose the glass transition temperature or melting temperature of the polymer.

Yacobucci et al. '858, which is drawn to overcoating composition comprising polyurethane, disclose the use of polyurethane having glass transition temperature of 0-70 ^{0}C in order that composition has good film forming properties during coating and drying but which also provides coating with water-resistance, scratch resistance, and fingerprint resistance (col.1, lines 6-10, col.2, lines 59-67, and col.4, lines 1-2).

Thompson et al. disclose that ink jet printers normally operate at temperatures of 50-150 ^{0}C (col.10, lines 38-39). Given that the fixative of Shoji et al. is printed using an ink jet printer and further given that in order that the ink be properly ejected from the nozzles of the ink printer the fixative must be in liquid form, it would have been obvious to one of ordinary skill in the art to use polyurethane which melts at 50-150 ^{0}C in order that the fixative can be properly liquefied and ejected from the ink jet printer without clogging the printer nozzle.

Given that the claimed fixative is the same as the fixative of Shoji et al. once the isocyanate and polyol are reacted on the printing medium and further given the motivation for using polyurethane having glass transition temperature and melting temperature disclosed by Yacobucci et al. '858 and Thompson et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use the fixative of Shoji et al. with polyurethane having such glass transition temperature and melting temperature, and thereby arrive at the claimed invention.

With respect to difference (c), Shoji et al. each disclose the use of polyurethane in the fixative fluid. It is well known that polyurethane is formed by reacting isocyanate and polyol.

Thompson et al., which is drawn to reactive ink composition, disclose reacting 2-40% isocyanate with polyol (col.13, lines 23-24) wherein the amount of isocyanate controls the degree of crosslinking (col.5, lines 45-47), which in turn would control the properties of the final reacted product, i.e. polyurethane, such as viscosity, molecular weight, and solubility.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use this amount of isocyanate when forming the polyurethane of Shoji et al. in order to produce polyurethane with the desired viscosity, molecular weight, and solubility, and thereby arrive at the claimed invention.

4. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. in view of Yacobucci et al. '858 and Thompson et al. as applied to claims 1 and 5-7 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The difference between Shoji et al. in view of Yacobucci et al. '858 and Thompson et al. and the present claimed invention is the requirement in the claims of different color inks.

Shoji et al. disclose overcoating an ink composition with fixative. However, there is no disclosure of using the fixative with a set of different color inks as presently claimed.

Kurabayashi et al. disclose using fixative with a set of inks including yellow, cyan, magenta, and black inks (col.3, lines 23-25 and col.14, lines 5-7) in order to produce a multicolor image.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use fixative of Shoji et al. with set of different color inks in order to produce multicolor image, and thereby arrive at the claimed invention.

5. Claims 1, 5-8, 12-16, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. (U.S. 6,087,051) in view of Yacobucci et al. '858 (U.S. 6,312,858) and Thompson et al. (U.S. 6,341,856).

Shoji et al. disclose overcoating composition or fixative for ink jet printing wherein the fixative overcoats the ink and comprises vehicle and polyurethane. Further, Shoji et al. disclose method comprising printing ink from ink jet printer onto recording medium followed by printing the fixative from ink jet printer onto the ink. Thus, it is seen that Shoji et al. disclose combination of ink and fixative (abstract, col.2, lines 20-25, col.15, lines 42-45, col.16, lines 63-65, and col.19, lines 1-23).

The difference between Shoji et al. and the present claimed invention is the requirement in the claims of (a) two-part system and amount of reactive monomer/polyol and (b) glass transition temperature and melting temperature of the polyurethane.

With respect to difference (a), it is noted that the present claims require a fixative, method for printing, and combination each comprising two-part fixative that comprises a reactive monomer such as isocyanate and second component such as polyol wherein the reactive monomer and second component react to form a polymer on the printing medium while Shoji et al. disclose fixative, method for printing, and combination each comprising fixative comprising polyurethane. It is well known that polyurethane is formed by the reaction of isocyanate and polyol.

Thompson et al. disclose reacting 2-40% polyisocyanate with polyol and further disclose storing polyol and polyisocyanate in separate reservoirs, i.e. cartridges, in order to prevent premature reaction between the two components (col.5, lines 61-62 and col.6, lines 18-20). It

would have been within the skill level of one of ordinary skill in the art to recognize that such premature reaction would result in formation of undesirably high molecular weight or highly crosslinked polymer before printing wherein such polymer would clog the printer nozzles.

With respect to difference (b), Shoji et al. each disclose the use of polyurethane, but do not disclose the glass transition temperature or melting temperature of the polymer.

Yacobucci et al. '858, which is drawn to overcoating composition comprising polyurethane, disclose the use of polyurethane having glass transition temperature of 0-70 ^{0}C in order that composition has good film forming properties during coating and drying but which also provides coating with water-resistance, scratch resistance, and fingerprint resistance (col.1, lines 6-10, col.2, lines 59-67, and col.4, lines 1-2).

Thompson et al. disclose that ink jet printers normally operate at temperatures of 50-150 ^{0}C (col.10, lines 38-39). Given that the fixative of Shoji et al. is printed using an ink jet printer and further given that in order that the ink be properly ejected from the nozzles of the ink printer the fixative must be in liquid form, it would have been obvious to one of ordinary skill in the art to use polyurethane which melts at 50-150 ^{0}C in order that the fixative can be properly liquefied and ejected from the ink jet printer without clogging the printer nozzle.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to form the fixative disclosed in Shoji et al. by a two-part system wherein polyol and polyisocyanate are kept in separate reservoirs and react on the printing medium to form the polyurethane in order to prevent premature reaction and further it would have been obvious to one of ordinary skill in the art to use polyurethane having glass transition temperature and melting temperature disclosed by Yacobucci et al. '858 and Thompson et al. as described above

in order to produce fixative which would producing coating with water resistance, scratch resistance, and fingerprint resistance as well as eject from printer nozzle properly, and thereby arrive at the claimed invention.

6. Claims 2-4, 9-11, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. in view of Yacobucci et al. '858 and Thompson et al. as applied to claims 1, 5-8, 12-16, and 20-22 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The difference between Shoji et al. in view of Yacobucci et al. '858 and Thompson et al. and the present claimed invention is the requirement in the claims of different color inks.

Shoji et al. disclose overcoating an ink composition with fixative. However, there is no disclosure of using the fixative with a set of different color inks as presently claimed.

Kurabayashi et al. disclose using fixative with a set of inks including yellow, cyan, magenta, and black inks (col.3, lines 23-25 and col.14, lines 5-7) in order to produce a multicolor image.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use fixative of Shoji et al. with set of different color inks in order to produce multicolor image, and thereby arrive at the claimed invention.

7. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yacobucci et al. '858 (U.S. 6,312,858) in view of Yacobucci et al. '101 (U.S. 6,268,101).

Yacobucci et al. '858 disclose overcoating composition or fixative for ink jet printing wherein the fixative overcoats the ink and comprises vehicle and polyurethane possessing glass

transition temperature of 0-70 ^{0}C wherein the polyurethane is produced by reacting isocyanate with polyol in presence of catalyst (col.1, lines 6-10, col.2, lines 59-67, col.3, lines 2-10 and 47-51, col.4, lines 1-6, col.7, lines 8-10, and col.9, line 16-col.10, line 5). Attention is called to col.13, lines 41-46 that disclose polyurethane obtained from approximately 37% polyol and 54.5% diisocyanate. Although there is no explicit disclosure of the melting temperature of the polyurethane, it is well known, as disclosed by Yacobucci et al. '101 that polyurethane obtained from polycarbonate polyol, as is the polyurethane of Yacobucci et al. '858, melts at 70-160 ^{0}C and thus, it is clear that the polyurethane of Yacobucci et al. '858 intrinsically possesses melting temperature as presently claimed.

The difference between Yacobucci et al. '858 and the present claimed invention is the requirement in the claims of two-part system.

It is noted that the present claims require a fixative comprising a reactive monomer such as isocyanate and second component such as polyol wherein the reactive monomer and second component react to form a polymer on the printing medium while Yacobucci et al. '858 disclose fixative comprising polyurethane, which is formed by reacting isocyanate and polyol, that is deposited onto a printing medium.

Noting that the present claims are directed to a fixative, and further that the claimed fixative is the same as the fixative of Yacobucci et al. '858 once the isocyanate and polyol are reacted on the printing medium, that is, after reaction the claimed fixative comprises polyurethane, it is not seen as to how the process of forming the fixative by separately combining the ingredients via a reaction between isocyanate and polyol (two-part system) would lead to the fixative as being patentable over the same fixative formed by directly depositing the polymer

into the printing medium (one-part system). Moreover, there is no evidence to indicate any criticality of the two-part polyurethane system over the one-part polyurethane system.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art that the end result of the fixative of Yacobucci et al. '858 would be the same as that of the presently claimed fixative, i.e. polyurethane overcoating, regardless of whether the polyurethane is directly deposited onto the printing medium or the polyurethane is formed on the printing medium by reaction of isocyanate and polyol, and thus, one of ordinary skill in the art would have arrived at the claimed invention.

8. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yacobucci et al. '858 in view of Yacobucci et al. '101 as applied to claims 1 and 5-7 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The difference between Yacobucci et al. '858 in view of Yacobucci et al. '101 and the present claimed invention is the requirement in the claims of different color inks.

Yacobucci et al. '858 et al. disclose overcoating an ink composition with fixative. However, there is no disclosure of using the fixative with a set of different color inks as presently claimed.

Kurabayashi et al. disclose using fixative with a set of inks including yellow, cyan, magenta, and black inks (col.3, lines 23-25 and col.14, lines 5-7) in order to produce a multicolor image.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use fixative of Yacobucci et al. '858 with set of different color inks in order produce multicolor image, and thereby arrive at the claimed invention.

9. Claims 1, 5-8, 12-14, 16, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yacobucci et al. '858 (U.S. 6,312,858) in view of Yacobucci et al. '101 (U.S. 6,268,101) and Thompson et al. (U.S. 6,341,856).

Yacobucci et al. '858 disclose overcoating composition or fixative for ink jet printing wherein the fixative overcoats the ink and comprises vehicle and polyurethane possessing glass transition temperature of 0-70 ^{0}C wherein the polyurethane is produced by reacting isocyanate with polyol in presence of catalyst. There is also disclosed method comprising printing ink from ink jet printer onto printing medium followed by overcoating with the fixative. Thus, it is clear that Yacobucci et al. '858 also disclose combination of fixative and ink (col.1, lines 6-10, col.2, lines 59-67, col.3, lines 2-10 and 47-51, col.4, lines 1-6, col.7, lines 8-10, and col.9, line 16-col.10, line 5). Attention is called to col.13, lines 41-46 that disclose polyurethane obtained from approximately 37% polyol and 54.5% diisocyanate. Although there is no explicit disclosure of the melting temperature of the polyurethane, it is well known, as disclosed by Yacobucci et al. '101 that polyurethane obtained from polycarbonate polyol, as is the polyurethane of Yacobucci et al. '858, melts at 70-160 ^{0}C and thus, it is clear that the polyurethane of Yacobucci et al. '858 intrinsically possesses melting temperature as presently claimed.

The difference between Yacobucci et al. '858 and the present claimed invention is the requirement in the claims of two-part system.

It is noted that the present claims require a fixative, method for printing, and combination each comprising two-part fixative that comprises a reactive monomer such as isocyanate and second component such as polyol wherein the reactive monomer and second component react to form a polymer on the printing medium while Yacobucci et al. '858 disclose fixative, method for printing, and combination each comprising fixative comprising polyurethane formed by the reaction of isocyanate and polyol.

Thompson et al. disclose reacting 2-40% polyisocyanate with polyol and further disclose storing polyol and polyisocyanate in separate reservoirs or containers in order to prevent premature reaction between the two components (col.5, lines 61-62 and col.6, lines 18-20). It would have been within the skill level of one of ordinary skill in the art to recognize that such premature reaction would result in formation of undesirably high molecular weight or highly crosslinked polymer before printing.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to form the fixative disclosed in Yacobucci et al. '858 by a two-part system wherein polyol and polyisocyanate are kept in separate containers and react on the printing medium to form the polyurethane in order to prevent premature reaction, and thereby arrive at the claimed invention.

10. Claims 2-4, 9-11, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yacobucci et al. '858 in view of Yacobucci et al. '101 and Thompson et al. as applied to claims 1, 5-8, 12-14, 16, and 20-22 above, and further in view of Kurabayashi et al. (U.S. 5,985,975).

The difference between Yacobucci et al. '858 in view of Yacobucci et al. '101 and Thompson et al. and the present claimed invention is the requirement in the claims of different color inks.

Yacobucci et al. '858 disclose overcoating an ink composition with fixative. However, there is no disclosure of using the fixative with a set of different color inks as presently claimed.

Kurabayashi et al. disclose using fixative with a set of inks including yellow, cyan, magenta, and black inks (col.3, lines 23-25 and col.14, lines 5-7) in order to produce a multicolor image.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use fixative of Yacobucci et al. '858 with set of different color inks in order to produce multicolor image, and thereby arrive at the claimed invention.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inamoto et al. (U.S. 6,000,793) disclose protective coating composition for ink jet printing wherein the composition comprises vehicle and polyurethane, however, there is no disclosure of the melting temperature of glass transition temperature of the polyurethane and no disclosure of two-part system as presently claimed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
8/20/06